

REMARKS

In this amendment, claims 4, 14 and 16 have been amended. Claims 4, 5, 14-17 and 21 are active in this application, of which claims 4 and 14 are independent.

Rejections Under 35 U.S.C. §103

Previously, claims 4 and 5 have been rejected under 35 U.S.C. §103(a) for being unpatentable over Japanese Patent Publication No. 08-254680 issued to Kubo, *et al.* (“Kubo”) in view of U. S. Patent No. 6,219,125 issued to Ishikura, *et al.* (“Ishikura”). This rejection is respectfully traversed.

Amended claim 1 recites “A wire for a liquid crystal display, comprising: a wire layer made of either a metal or a metal alloy; a supplementary layer located either on or under said entire wire layer and made of either metal nitride or metal alloy nitride; and *a transparent electrode electrically connected to said wire layer*”.

Neither Kubo nor Ishikawa shows such features individually or in combination.

The primary reference to Kubo teaches a gate electrode (e.g., scanning line) Yn-1 that is formed below a gate insulating film 121 and *electrically and physically isolated* from any conductive wire layers on the gate insulating film 121. Thus, Kubo fails to teach or suggest a transparent electrode electrically connected to the gate electrode Yn-1.

Also, as the Examiner admits, Kubo “does *not* expressly teach the supplementary layer located either on or under the entire wire layer and made of either Mo-nitride or Mo-alloy nitride” (Office Action, page 2). The secondary reference to Ishikura is directed to forming a Mo nitride layer on or under principal electroconductive layer 12 made of a metal or metal nitride so as to work as *an adhesive layer* 11 (Fig. 2) and/or *a protection layer* 13 (Fig. 3), respectively.

Thus, even if the gate line Yn-1 of Kubo is modified such that the adhesive layer 11 or the protection layer 13 of Ishikura is formed on or under the molybdenum layer 13 in the gate electrode Yn-1, the resulting structure would still fail to show a transparent electrode electrically connected to the gate wire Yn-1.

Also, in Ishikura, the molybdenum nitride adhesive layer 11 and the molybdenum nitride protection layer 13 are provided to further increase *adhesiveness* between the glass substrate 2 and the metal electrode 3 and *surface roughness* of the metal electrode 3, respectively. The gate electrode structure Yn-1 in Kubo has three layers are adhered together well enough to reduce wiring resistance. Also, the gate structure Yn-1 is protected by a gate insulating film 121. Thus, there is no motivation for combining the teachings of Kubo and Ishikura as asserted.

For these reasons, it would not have been obvious to combine the teachings of the applied reference to arrive at the claimed invention. Thus, claim 4 would be patentable over Kubo and Ishikura. Claim 5 that is dependent from claim 4 would be also patentable at least for the same reason. Accordingly, Applicants respectfully request that the rejection over claims 4 and 5 be withdrawn.

In the Office Action, claims 14-17 and 21 have been rejected under 35 U.S.C. §103(a) for being unpatentable over Applicants' Admitted Prior Art ("AAPA") in view of Kubo and further in view of Ishikawa. This rejection is respectfully traversed.

Amended claim 14 further recites "A liquid crystal display, comprising: ... a data wire made of one of either a metal or a metal alloy and formed on the gate insulating layer; a supplementary data wire located either on or under the entire data wire and made of either metal nitride or metal alloy nitride; *a passivation layer* formed on the data wire or the supplementary

data wire and covering said semiconductor layer; and a transparent electrode formed on the passivation layer and electrically connected to the data wire through a contact hole formed in the passivation layer”.

None of the references in the record shows such features individually or in combination.

AAPA fails to show the claimed feature of “a data wire made of one of either a metal or a metal alloy and formed on the gate insulating layer; a supplementary data wire located either on or under the entire data wire and made of either metal nitride or metal alloy nitride”, as admitted by the Examiner.

As previously mentioned, the asserted combination of Kubo and Ishikura fails to show a transparent electrode electrically connected to the gate wire Yn-1, and there is no motivation for combining Kubo and Ishikura. Thus, it would not have been obvious to combine the teachings of AAPA, Kubo and Ishikura to arrive at the claimed invention.

Therefore, it is submitted that independent claim 14 is patentable over AAPA, Kubo and Ishikawa. Claims 15-17 and 21 that are dependent from claim 14 would be also patentable at least for the same reason. Accordingly, Applicants respectfully request that the rejection over claims 14-17 and 21 be withdrawn.

CONCLUSION


All of the previous grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all previous objections and rejections and that they be withdrawn. Applicants believe that a full and complete response has been made to the outstanding Office Action and, as such, claims 4, 5, 14-17 and 21 are in condition for allowance. If the Examiner believes, for any

reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

It is not believed that any extensions of time or fees for net addition of claims are required at this moment. However, if additional extension of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. §1.136(a), and any fees required therefor (including fees for net addition of claims) are hereby authorized to be charged to our Deposit Account No. 23-1951.

Prompt and favorable consideration of this Amendment is respectfully requested.

Respectfully submitted,



Hae-Chan Park
Reg. No. 50,114

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McGuire Woods LLP
1750 Tysons Boulevard
Suite 1800
McLean, VA 22102-4215
Tel: 703-712- 5365
Fax: 703-712- 5280
HCP:WSC/kbs

APPENDIX A

Please amend claims 4, 14 and 16, as follows.

4. (Three Times Amended) A wire for a liquid crystal display, comprising:
a wire layer made of either [molybdenum or molybdenum] a metal or a metal alloy; [and]
a supplementary layer located either on or under said entire wire layer and made of either
[molybdenum] metal nitride or [molybdenum] metal alloy nitride; and
a transparent electrode electrically connected to said wire layer.

14. (Three Times Amended) A liquid crystal display, comprising:
an insulating substrate;
a gate wire formed on the substrate;
a gate insulating layer covering the gate wire;
a semiconductor layer formed on said gate insulating layer;
a data wire made of one of either [molybdenum or molybdenum] a metal or a metal alloy
and formed on the gate insulating layer;
a supplementary data wire located either on or under the entire data wire and made of
either [molybdenum] metal nitride or [molybdenum] metal alloy nitride;
a passivation layer formed on the data wire or the supplementary data wire and covering
said semiconductor layer; and
a [pixel] transparent electrode formed on the passivation layer and electrically connected
to the data wire through a contact hole formed in the passivation layer.

16. (Twice Amended) The liquid crystal display of 15, further comprising[:] a supplementary gate wire which is located either on or under the gate wire and made of either [molybdenum] metal nitride or [molybdenum] metal alloy nitride.